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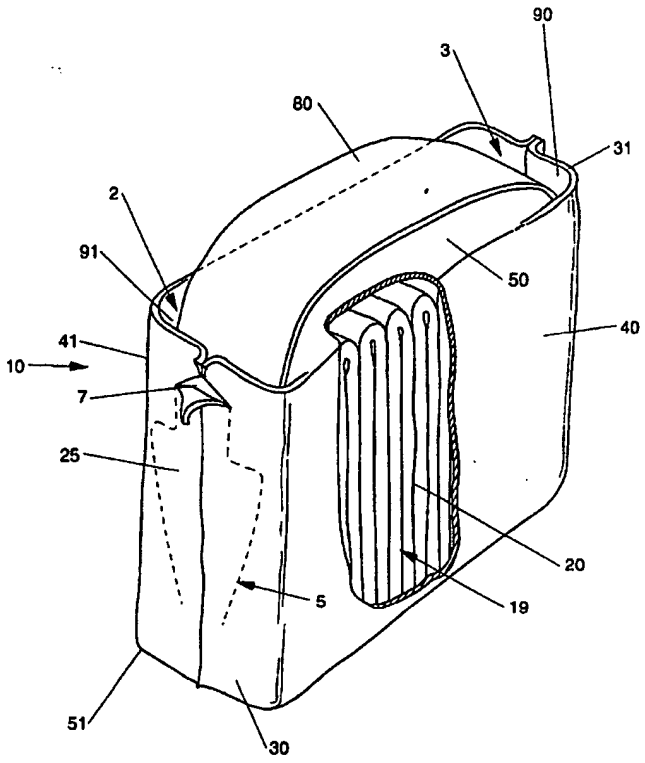
(54) Title: FLEXIBLE BAG FOR CONTAINING COMPRESSED ARTICLES HAVING AN IMPROVED OPENING FEATURE

(57) Abstract

An improved side opening top gusset, rectangular flexible bag (10) for containing a stack of compressed flexible articles (20). The bag has front and back panels (40, 41), two side panels (30, 31) and top and bottom panels (50, 51), all of which are connected together to form an internal compartment (19) for containing the stack under compression. The stack is arranged within the bag in such a way that the side panels are under tension. The bag further including two welds one adjacent each juncture between the top (50) and the side panels (30, 31). Each of the welds joins the top and the panels together along a continuous line (100) so as to create external pockets (2, 3) on the bag. The external pockets have no access to the internal compartment of the bag. The bag further including a continuous line of weakness (5) located at least partially within one of the side panels. The line of weakness defines a portion (25) of the side panel to be at least partially separated from the remainder of the side panel for gaining access to said articles. The improvement to the bag is that the bag further includes a pull tab (7), adjacent to the line of weakness, for initiating the opening of the bag along the line of weakness. The pull tab is located on the side panel having the line of weakness (5) and is located on the pocket (2) so as to reduce the exposure of the articles to the atmosphere.



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FLEXIBLE BAG FOR CONTAINING COMPRESSED ARTICLES HAVING AN IMPROVED OPENING FEATURE

FIELD OF THE INVENTION

The present invention relates to an easy open flexible bag for containing a number of compressible articles such as disposable absorbent bandages, baby diapers, sanitary napkins, incontinent briefs and the like.

The present invention has even further relation to such bags which have pull tab on a side panel for initiating the opening of the bag.

BACKGROUND ART

Relatively soft and flexible compressible articles such as disposable diapers, catamenial pads, incontinent briefs and the like have entered widespread use in many parts of the world over the last 20-30 years. In the past, these articles were typically folded at their midpoint, collected in stacks and inserted into paperboard or cardboard cartons or flexible bags while they were subject to little or no compression in a direction substantially parallel to their thickness. In such circumstance, the dimensions of the paperboard or cardboard carton or flexible bag are generally determined by the number of discrete articles contained in the stack or stacks placed within the carton or bag.

Recent consumer purchasing trends in the disposable absorbent products field, particularly in the United States, have led to lower purchase frequencies with larger quantities of disposable absorbent products per purchase. Manufacturers have responded by continuing to increase the number of discrete articles contained within a single package, resulting in a number of jumbo packs containing relatively large quantities of disposable absorbent products such as baby diapers, e.g., 32, 44, 48, 64, 96, etc. Because of the bulk of the relatively low density flexible compressible articles in question, this has resulted in packages having high volume but low weight. This combination of high volume and low weight increases storage and handling costs for the manufacturer, rapidly exhausts the limited shelf space of the retailer, and detracts from the convenience of storage and use for the consumer. In addition, the relatively large volume of package material required to house the disposable absorbent articles in an uncompressed condition must be disposed of when the package in question has been fully emptied. In the case of cartons, this requires further effort by the end user to crush

or otherwise minimize the volume of the empty container before placing it in the trash. Moreover, such excessive packaging causes an undue amount of waste and is a burden on the environment.

Recently, in order to over come the problems with the packaging of compressible articles, manufacturers have begun to package relatively large numbers of the articles in smaller flexible plastic bags while under compression. An example of such a bag is given in U.S. Patent 5,054,619, SIDE OPENING FLEXIBLE BAG WITH LONGITUDINALLY ORIENTED CARRYING HANDLE SECURED TO SIDE PANELS, issued to Muckenfuhs on October 8, 1991, which is hereby incorporated herein by reference. This reference discloses a side opening top gusset flexible plastic bag containing a stack of compressed flexible articles. The bag has top, bottom, front, back and side panels, wherein the side panels are under tension. The bag has a continuous line of weakness located at least partially on one of the side panels to define a portion of the side panel which will be partially removed to gain access to the articles. These types of bags typically include a pull tab on the side panel for initiating the opening of the bag. This pull tab usually comprises a cut of a predetermined length, extending through the bag material so that a consumers thumb or finger can be inserted therein for initiating the opening of the bag.

A drawback to the above mentioned packages is that the cut which forms the pull tab to initiate opening can at times expose the enclosed articles to an undesirable amount of external contamination to the atmosphere, before opening. External contamination is perceived as being undesirable for sanitary products because they are usually in contact with the body. The contamination is undesirable for both aesthetic and perceived safety reasons. Contamination is perceived by the consumer as being able to introduce bacteria which could be harmful to the user. Moreover, liquid contamination could destroy articles such as absorbent products. Protection of the diapers from external contamination before opening is viewed as an important feature to consumers.

There has, therefore been a desire to have a flexible bag for containing a number of flexible articles under compression, wherein external exposure of the articles prior to opening is substantially reduced.

It is therefore an object of the present invention to provide a side opening top gusset flexible bag for containing a stack of flexible articles under compression wherein the pull tab does not expose the articles to external contamination prior to opening.

It is another object of the present invention to provide such a bag having a handle, wherein the handle is still operative after opening.

The aforementioned and other objects of the present invention will become more apparent hereinafter.

SUMMARY OF THE INVENTION

In accordance with the present invention there is provided an improved side opening top gusset, rectangular flexible bag for containing a stack of compressed flexible articles. The bag has front and back panels, two side panels and top and bottom panels, all of which are connected together to form an internal compartment for containing the stack under compression. The stack is arranged within the bag in such a way that the side panels are under tension. The bag further including two welds one adjacent each juncture between the top and the side panels. Each of the welds joins the top and the side panels together along a continuous line so as to create external pockets on the bag. The external pockets have no access to the internal compartment of the bag. The bag further including a continuous line of weakness located at least partially within one of the side panels. The line of weakness defines a portion of the side panel to be at least partially separated from the remainder of the side panel for gaining access to the articles. The improvement to the bag is that the bag further includes a pull tab, adjacent to the line of weakness. The pull tab comprises a means for initiating tearing along the substantially continuous line of weakness. The pull tab is located on the pocket adjacent the side panel having the line of weakness so as to reduce exposure of the articles to the atmosphere.

BRIEF DESCRIPTION OF THE DRAWINGS

While the specification concludes with claims particularly pointing out and distinctly claiming the present invention, it is believed that the present invention will be better understood from the forgoing description in conjunction with the accompanying drawings in which:

Figure 1 is a simplified perspective view of flexible bag in accordance with the present invention.

Figure 2 is a side view of an unfilled bag in accordance with the present invention.

Figure 3A is a simplified perspective view of a the bag of the present invention showing how a consumer would grab the pull tab to open the bag.

Figure 3B is a view similar to that of Figure 3A but showing the bag after it has been opened.

Figure 4 is a view similar to that of Figure 1 showing an alternative embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

While the present invention will be described in the context of providing an easy open flexible bag containing one or more stacks of folded disposable absorbent diapers, the present invention is in no way limited to such application. As pointed out earlier herein, the present invention may be practiced to greatest advantage to provide reduced storage, shipping and handling costs in any situation involving flexible articles which are substantially compressible in at least one of their dimensions, such as their thickness. In addition, the present invention can provide automatically assisted dispensing of discrete flexible articles one at a time due to the action of the compressive forces acting upon the flexible articles during a substantial portion of the bag's usable life. The detailed description contained herein, which relates to a particularly preferred easy open flexible bag of compressed disposable diapers, will allow one skilled in the art to readily adapt the invention to other uses.

Figure 1 is a simplified perspective illustration of a particularly preferred embodiment of a side opening top gusset substantially rectangular flexible bag 10 in accordance with the present invention. Bag 10 contains a number of compressed flexible articles 20 arranged in a stack. Bag 10 comprises opposing front and back panels 40 and 41, opposing side panels 30 and 31, and opposing top and bottom panels 50 and 51. All of the aforementioned panels are connected together to form an internal compartment 19 for containing the stack of compressed flexible articles 20 under compression. The stack of compressed articles are placed in bag 10 in such a way that side panels 30 and 31 are under tension.

As seen from Figure 2, Flexible bag 10 is a top gusset bag formed by folding a web of film, paper, plastic or other suitable material. The general method for forming top gusset flexible bags from a continuous web of material is well known in the art. The general method for constructing and filling top gusset flexible bags similar to those of the present invention is given in the earlier incorporated U.S. patent 5,054,619, SIDE OPENING FLEXIBLE BAG WITH LONGITUDINALLY ORIENTED CARRYING HANDLE SECURED TO SIDE PANELS, issued to Muckenfuhs on October 8, 1991.

The improvement in the construction of these bags in accordance with the present invention can best be explained by referring to Figure 1 in conjunction with Figure 2. Figure 2 a simplified side view of the bag 10 in a folded and flat condition before being filled with articles 20. The bag is folded along its top gusset so that top panel 50 is collapsed and folded inwardly so as to be parallel with side panel 40, and the bag is further folded at about the half way line of side panels 30 and 31 so they are also parallel to side panel 40. As seen from both Figures 1 and 2, bag 10 includes a substantially continuous line of weakness 5 located at least partially within side panel 30. Line of weakness 5 defines a predetermined portion 25 of side panel 30 which will be partially separated from the remaining portion of the side panel so as to gain access to articles 20.

Bag 10 preferably includes a handle 80 for easy carrying. Handle 80 preferably extends longitudinally across the top of the bag between side walls 30 and 31. Handle 80 can be made from the same material as the bag or any other suitable material. Handle 80 can be secured to bag 10 by any suitable means known in the art. In order for the handle to better support the weight of the bag, bag 10 is provided with reinforcing welds adjacent juncture 53 between the top and side panels. Figure 2 shows the reinforcing weld adjacent side panel 30, however, a similar weld is present in a corresponding location adjacent side panel 31. The reinforcing welds join top panel 50 to side panels 30 and 31 along a substantially continuous line 100 so as to create an external pockets 2 and 3, shown in Figure 1. The welds also join the handle 80 to the bag. Preferably the weld extends from line 100 to the top of the bag. External pockets 2 and 3 are created from the portions of the side walls and the top wall adjacent to juncture 53 which is above and on the reinforcing welds 1. The external pockets have substantially no access to internal compartment 19.

The improvement to the flexible bag 10 in accordance with the present invention resides in the placing of pull tab 7, for initiating the opening of the bag. The present invention contemplates placing pull tab 7 on pocket 2. This substantially reduces the exposure of articles 20 to the atmosphere before opening because pocket 2 has substantially no access to internal compartment 19. Pull tab 7 comprises a means for initiating tearing along the substantially continuous line of weakness 5. In the embodiment shown in Figures 1 and 2 pull tab 7 is formed by a cut of a predetermined length extending through the pocket. As seen from Figures 3A and 3B, pull tab 7 allows a consumer to easily insert a thumb or finger within the pull tab and initiate tearing along line of weakness 5, thereby partially removing portion 25 so as to expose articles 20 for

use. Because the pull tab is located above the reinforcing weld on pocket 2 and not below the weld, exposure of the articles to the atmosphere prior to opening is substantially reduced.

In the embodiment shown in Figures 1 and 2, handle 80 is secured to the bag along side panels 30 and 31 along or above the reinforcing welds 1 so as to be located on the interior of pockets 2 and 3. The reinforcing welds strengthen the attachment of the handle to the bag so that the handle can easily carry the weight of the bag. The handle 80 is preferably wider than the pull tab 7 and is secured to the side panel 30 in areas out side of the pull tab 7 so that when the bag is opened the handle remains in place and functional. However, one could practice the present invention with a non-handled bag if the welds were placed on the bag anyway.

The shape of the pull tab 7 must be such that it is easily gripped so that a user can exert sufficient force to pull the panel open along line of weakness 5. Preferably it is large enough so that most people are able to insert their finger tip therethrough. Portion 25 which is partially removed from the rest of the bag is preferably large enough to permit easy removal of the articles therein. However, it is preferably small enough to prevent the articles from tumbling out of the bag upon opening. As can best be seen from Figures 3A and 3B, the unrestrained folded edges of the compressed articles 20 begin to project through the aperture spanning the tensioned side panel 30 in a fan-like array when the bag is opened. This is due to a partial release of the compressive forces acting upon the stack of compressed disposable diapers 20 contained within the flexible bag 15. Note, however, that the uppermost end of the material which is partially separated from side wall 30 remains attached to flexible bag 15. Accordingly, the end of carrying handle 80 secured side panel 30 at area 82 remains completely functional if the user desires to carry the bag by its handle after opening.

Another embodiment of a pull tab in accordance with the present invention is shown in Figure 4. Figure 4 shows a simplified perspective view of a bag 110 in accordance with the present invention. Bag 110 is similar to bag 10 except for pull tab 107. Pull tab 107 comprises two lines of weakness 171 and 172 which extend up from the beginning of the reinforcing weld to the top edge of the bag. By pulling on pull tab 107, lines of weakness 171 and 172 will tear the bag along those lines and will continue the tear the bag along line of weakness 105, thereby opening the bag.

In one preferred embodiment the substantially continuous line of weakness 5 comprises a substantially continuous perforated line. In that instance the line 5 should

have different land to perforation ratios along different parts of the line. At the top of the bag where the user needs to tear the section of the bag where the top panel, side panel and handle are all secured together the land to perforation ratio should be fairly low due to the amount of material that needs to be ruptured. If there is a section above the weld line where the handle is not secured to the top and side panels then the land to perforation ratio can increased. Lastly, for portions below the weld line only the side wall is being ruptured so the land to perforation ratio can be increased even more. In one embodiment preferred material for forming the bag is a polymeric film such as low to medium density polyethylene from about 50 to 75 microns thick with a handle formed from the same material. In this case the preferred, but not necessary, land to perforation ratios are: 2:3 where three layers of material need to be ruptured; 3:3 where two layers need to be ruptured; and 4:3 where only the side panel needs to ruptured.

While various embodiments of have been illustrated and described herein, various modifications will be apparent to those skilled in the art without departing from the spirit and scope of the present invention. The terms used in describing the invention are used in their descriptive sense and not as terms of limitations, it be intended that all equivalents thereof be included within the scope of the appended claims.

What is claimed is:

1. A side opening top gusset, substantially rectangular flexible bag for containing compressed flexible articles arranged in a stack, the bag comprising opposing front and back panels, opposing side panels and opposing top and bottom panels, all of which are connected together to form an internal compartment for containing the stack under compression in such a way that the opposing side panels are under tension, the bag further including at least two welds one adjacent each juncture between the top and side panels, each of the welds joining the top and side panels together along a substantially continuous line so as to create external pockets on the bag, the external pockets having substantially no access to the internal compartment, the bag further including a substantially continuous line of weakness located at least partially within one of the side panels which defines a predetermined portion of the side panel to be at least partially separated from the remainder of the side panel for gaining access to the articles: the bag characterized by further including a pull tab, adjacent the line of weakness, the pull tab comprising a means for initiating tearing of the bag along the substantially continuous line of weakness so that the bag can be opened, the pull tab being located on the pocket adjacent the side panel having the line of weakness thereon, so as to reduce the exposure of the articles to the atmosphere.

2. The improvement of Claim 1 wherein the means for initiating tearing of the bag along the line of weakness comprises a cut of a predetermined length extending through the pocket containing the means.

3. The improvement of Claim 1 wherein the means for initiating tearing of the bag along the line of weakness comprises two additional lines of weakness on the pocket extending from a point adjacent where the weld begins to join the top and side panels along a substantially continuous line to the top edge of the pocket.

4. The improvement of Claim 1 wherein the bag further includes a handle.

5. The improvement of Claim 4 wherein the handle extends longitudinally across the top panel.

6. The improvement of Claim 5 wherein the handle is secured along the interior of the pockets.

7. The improvement of Claim 6 wherein the handle remains secured to the bag after the bag is opened.

8. The improvement of Claim 1 wherein the bag is formed from a polymeric film.

9. The improvement of Claim 1 wherein the substantially continuous line of weakness comprises a perforated line.

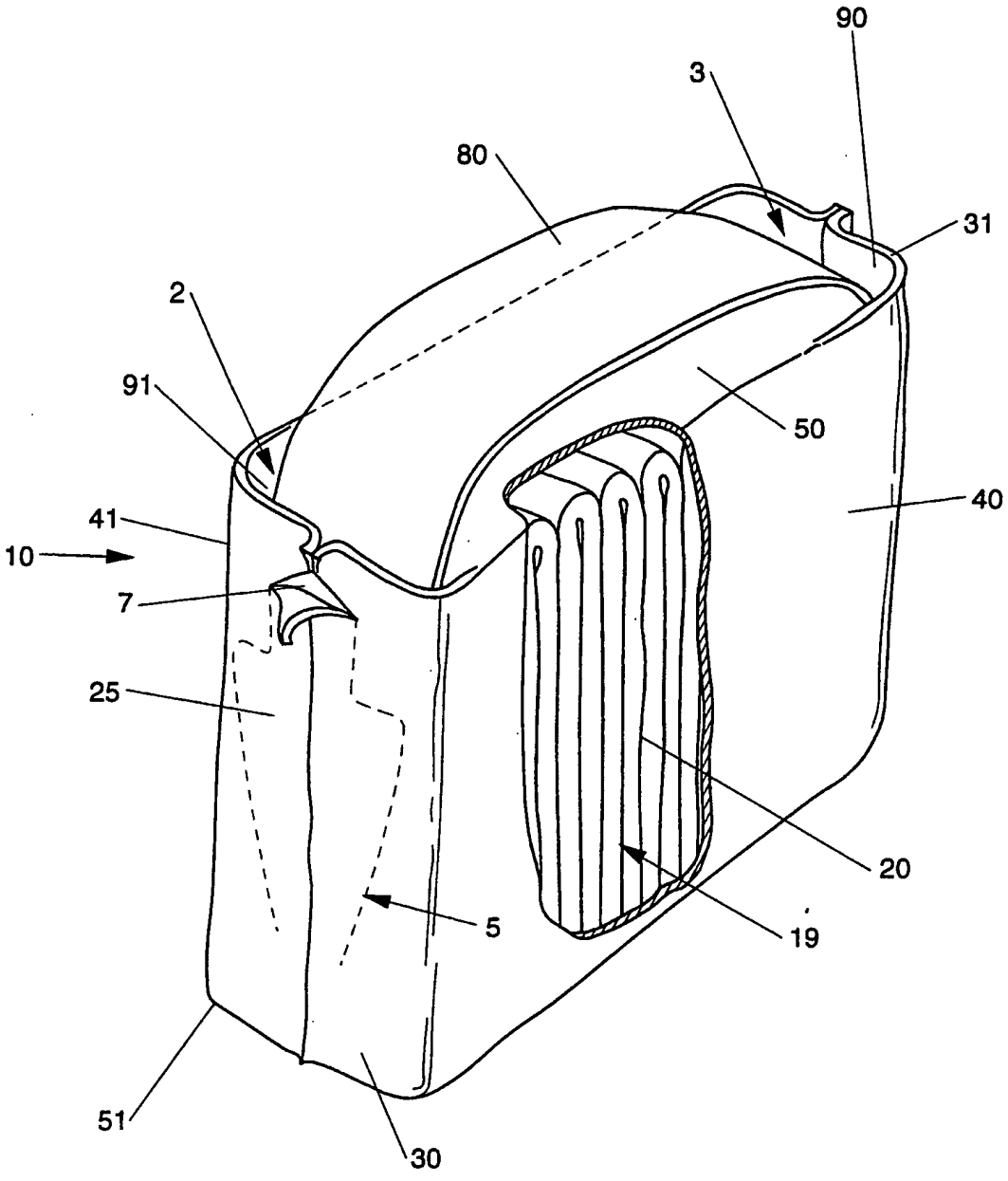

Fig. 1

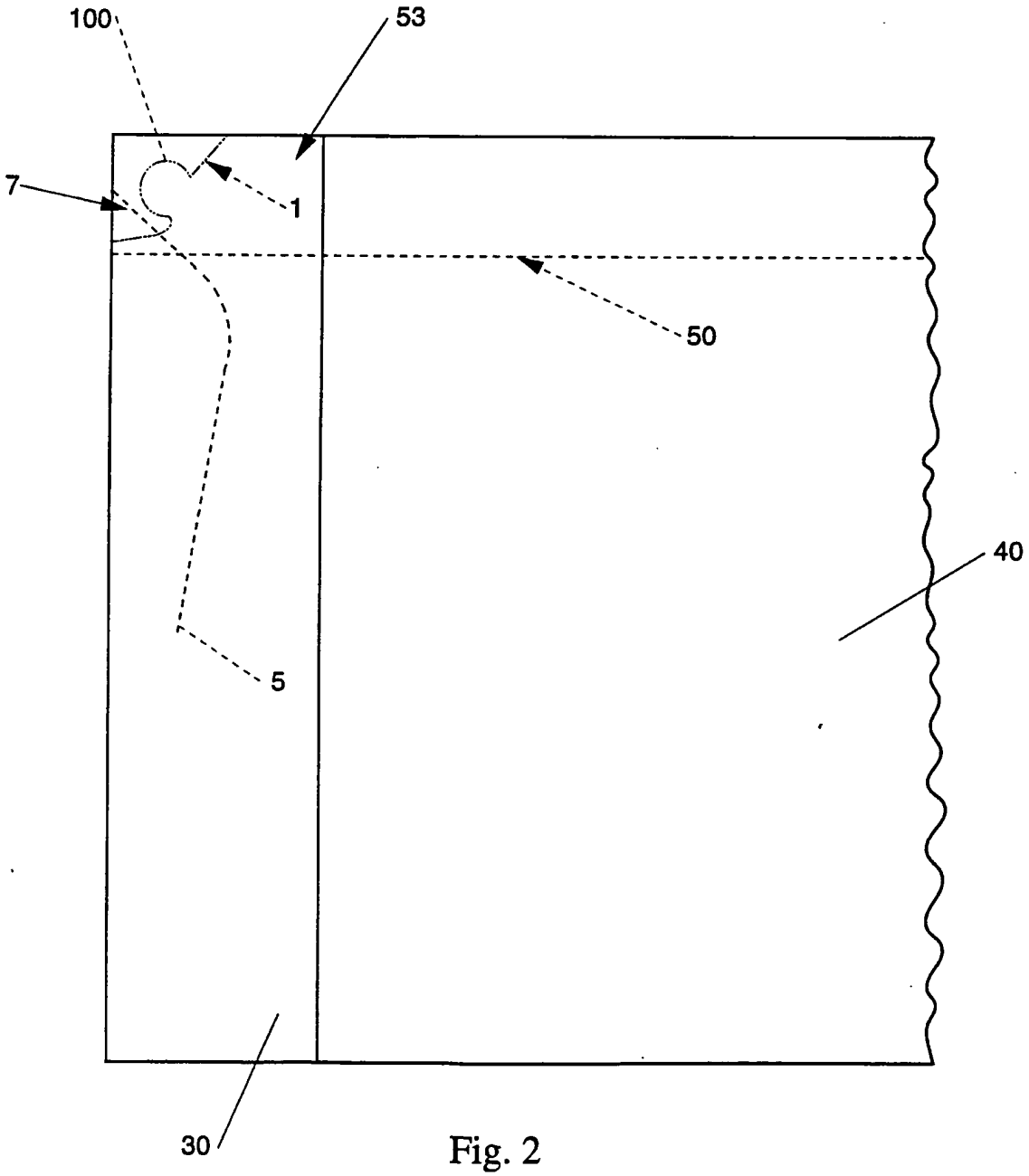

Fig. 2

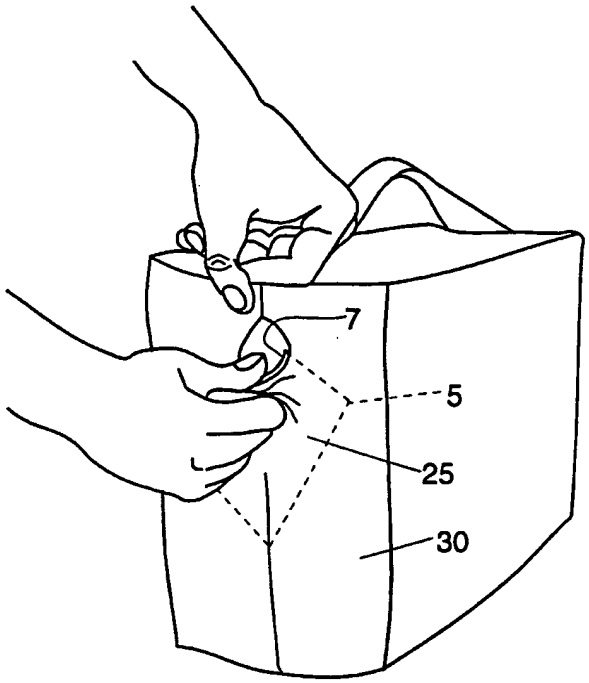

Fig. 3A

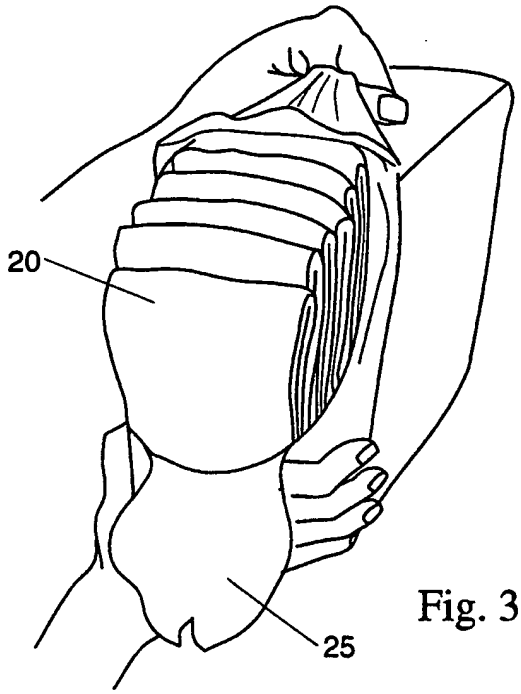

Fig. 3B

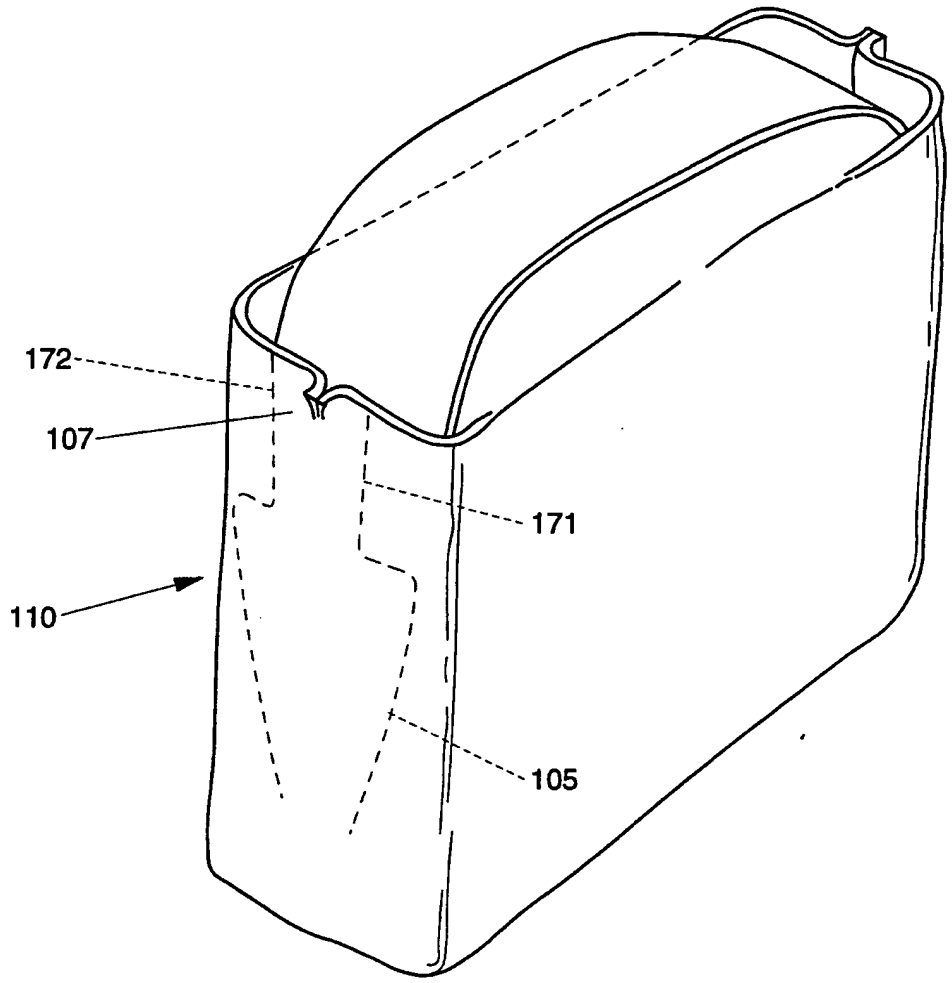

Fig. 4

INTERNATIONAL SEARCH REPORT

Interr ıal Application No
PCT/US 94/10541

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 B65D75/58

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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X Y	WO,A,93 16929 (PARAMOUNT PACKAGING CORPORATION) 2 September 1993 see page 9, line 32 - page 12, line 8 see page 18, line 20 - page 19, line 20 see page 24, line 25 - line 34 see figures 1,2,12 ---	1,3,4,8, 9 2,5-7
Y	WO,A,91 08962 (PROCTER AND GAMBLE CY) 27 June 1991 cited in the application & US,A,5 054 619 (PROCTER AND GAMBLE) see page 8, line 10 - page 11, line 16 see page 13, line 27 - line 34 see figures 1-9 ---	2,5-7
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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
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